PRAIRIE WATER
GLOBAL WATER FUTURES

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Annual Partners Meeting 2024 Report

Prairie Water hosted its final Annual Partners Meeting on May 1–2, 2024 in Saskatoon, Saskatchewan, Treaty 6 Territory. The purpose of the meeting was to share research results, reflect on the project, and discuss what is needed going forward. At the meeting, there was a strong presence of partners and researchers who have been committed long-term to the project. We extend our thanks to all who attended and all who have been involved with Prairie Water from 2017 to 2024. We especially thank the presenters, panel moderators, and panelists for their contributions to this meeting. We also thank Elder Roland Duquette (Mistawasis Nêheyiwak), who opened and closed our meeting with his thoughts and offered valuable insight during the meeting.

- 54 attendees
  - 30 partners from 23 organizations
  - 9 Prairie Water investigators
  - 15 other researchers and students
- 6 Prairie Water research summaries
- 1 Global Water Futures research summary
- 3 panel discussions
- 2 two breakout discussions

Breakout Sessions: The first breakout discussion kicked off the meeting, reminding us of our relationship to water. In the second breakout discussion to close the meeting, we discussed what is needed to improve water management, where have we seen success, and where we go from here. These sessions gave necessary space for attendees to engage in the discussion and share their expertise with each other.

GWF research outcomes for the Prairies

The Global Water Futures (GWF) research program resulted in a substantial amount of research and knowledge about the present and future state of water in Western Canada.

Watch presentation by Dr. John Pomeroy

With climate warming and wetting in Western Canada, we expect increasing winter precipitation (more rain), decreasing summer precipitation, more intense rainfall, and earlier peak flows in the spring. More wetting is projected for the Eastern Prairie and less wetting for the Western Prairie. However, precipitation in the region will continue to be highly variable year to year. In dry years, capturing snow becomes an important moisture source for agriculture. In an example agricultural basin (Smith Creek), wetland drainage increased annual streamflow by 3.5% for every 1% loss in wetland area. Wetland restoration effectively reverses this trend, but by the end of the century (2086–2100), increases in annual streamflow due to climate change cannot be mitigated by wetland management.

Prairie Water Research Summaries

Surface water availability: How will climate change and wetland drainage impact surface water?

Watch presentation by Dr. Chris Spence

We took a regional approach to answer this question so that results were widely applicable. We classified every small basin in the Prairies and created a virtual model for each class using CRHM (Cold Regions Hydrological Model). We learned how sensitive different areas are to changes in climate. We also learned that any amount of wetland drainage has an impact on streamflow, but where you are in the prairies (which basin class and local climate) will influence the size of the impact.

Prairie Water Governance: What information do people use to make decisions? What do different documents say about how water should be governed?

Watch presentation by Dr. Graham Strickert

People often (29 out of 74) prefer to have various information sources when making decisions. We learned that stories told in informal settings have stronger impacts on people, so it's beneficial to create space for sharing in meetings. In water governance documents, we found that inclusivity is frequently mentioned. Knowing that water stakeholders are many and diverse, we need inclusive, transparent, and communicative ways of managing water.

Wetland ecosystem services: Which wetlands must we keep? Are wetlands at risk from land-use and climate change?

Watch presentation by Dr. Colin Whitfield

While science cannot answer the first question, it can provide some evidence to inform decisions. We now understand more about how wetlands function (for example, wetland salinity changes over time due to dry and wet years). We studied wetland ecosystem services and added these to hydrological models. We now know that key indicators are sensitive to wetland removal. We see lower bird abundance, higher nutrient mobilization, and higher runoff as soon as we start draining. If precipitation increases in the future, nutrient mobilization may triple due to increased runoff. There also seems to be a link between land-use and agrochemical presence in wetlands. These results can be visualized online, with our Data Visualization Dashboard (https://gwf-vis.usask.ca/prairiewater/).

Subsurface water availability: How can we describe prairie groundwater? Is groundwater vulnerable to climate change?

Watch presentation by Dr. Grant Ferguson

We improved our understanding of groundwater in the Prairies. Water in aquifers deeper than ~ 50 m has the potential to be thousands to tens of thousands of years old. This groundwater is unlikely to be affected by climate change, but we don't know how sustainable it is to use until we start using and monitoring it. Shallow groundwater is recharged through landscape depressions (potholes) and will be affected by climate change.

Wetland economics: Economics is a strong driver of decisions around wetlands, but how do private landowners see the value of wetlands?

Watch presentation by Dr. Ken Belcher

In our Alberta case study (Vermillion River Basin), 38% of wetlands were too expensive to drain while 62% were beneficial (not including nuisance cost from driving equipment around wetlands). Wetlands also impact land rental decisions. Overall, wetland cost varies and we suggest that wetlands that are lower cost to landowners are "lower" cost to conserve and could be targeted for conservation. To understand the total economic value of wetland ecosystems for society, more research is needed.

Aquatic systems and governance: Tying together research from various parts of Prairie Water and from other projects.

Watch presentation by Dr. Helen Baulch

Prairie lakes are naturally green (nutrient-rich), but when *more* nutrients are added, they become *more* green, and blue-green. Managing nutrients on the land is key to water quality. Strategies include keeping water on the land, avoiding winter manure spreading, relocating cattle wintering sites, and the 4 R's (Right Rate, Right Time, Right Place, Right Source).
Conflict around wetland drainage can be deep-rooted. People are concerned about the objectivity of and being excluded from decision-making processes. Who has access to science and to scientists is important to consider because data = empowerment. Framing wetland drainage as a highly complex problem, understanding that there is no simple solution, can help to build trust.

Panel Discussions

The central theme that arose from all three panels was building relationships and trust between scientists and practitioners. Relationships are the foundation for success and panelists shared various ways to approach building relationships.

1. Discussion on Research Application:

Panelists: Rebecca Zagozewski, Kevin Shook, Amir Khatibi, Bob Halliday
Moderator: Monica Morrison

- **Panelists highlighted the need to build relationships** between scientists and practitioners. Personal relationships between scientists and practitioners allow research to be guided by real-world challenges and facilitates the uptake of new knowledge into practice.
- **To build relationships**, scientists or science representatives must identify user groups, meet with users "on their turf", meet informally and with food, and translate research into plain language and applicable formats. Meanwhile, practitioner or user organizations need to be open to including research presentations in their meetings.
- **Effective transfer of science to practice** requires presentations at the right meetings in practical language with practical examples. Practitioners will be more likely to use new methods if there are examples in their field or if government or other agencies are familiar with the research.

"We need to get better at discussing uncertainty with a potential user. This is an important aspect of science communication." – Bob Halliday

2. Reflecting on the Prairie Water project:

Panelists: Jared Wolfe, Phil Loring, Heather Davies, Wanda McFadyen
Moderator: Helen Baulch

Successes

Prairie Water succeeded in doing interdisciplinary work with a high level of collaboration and in creating a strong network of people and organizations across the Prairies. Sometime this collaboration pushed people out of their comfort zones, for example, to consider the spiritual aspect of water (thanks to the strong leadership of Anthony Johnston and others). Many students were trained and exposed to transdisciplinary science through Prairie Water. These successes were possible because of the willingness, humility, and generosity shown by committed partners and researchers at all stages of the project.

Shortcomings

There is always room for more partner engagement. Prairie Water researchers could have attended more partner events, meeting partners in their places, but researchers' time and capacity were often limited. Future similar projects could seek partnerships with young farmers' associations, more First Nations, and technical colleges in the region. There is also room for more urgency when sharing research results. The Prairies are the most highly human-transformed landscape in Canada, and prairie ecosystems including lakes, rivers, and wetlands are being impacted. But urgency must be communicated well.

Science and Practice

Early in Prairie Water, a conscious effort was made to listen to user questions, leading to thoughtful conversations that had a real impact on the research. To complete the cycle of practice influencing science and science influencing practice, it is critical to translate and communicate research results to partners who are interested in and need the outputs. To this end, the relationships and research network created through the project are valuable for disseminating results.

Science and Policy

When meeting with government officials to influence policy, researchers must understand where they are coming from. Share that you've worked with partners (i.e. voters) in addition to sharing the science. However, the people in policy circles are not the only audience. Wider and broader audiences can exert more influence on policy than we typically think. Everyone has an opportunity to be part of the broader conversation to which politicians are responding in the first place.

"The people are the ones that have the most voice, that's my belief. When you have a need, go to the people and say "how do you feel about this?" and you start planting a seed. This is how our people used to travel. They walked the land, all of them. It wasn't the leader that led the tribe, it was how he walked with the people, that's how the successes grow." – Roland Duquette (Mistawasis Nêheyiwak)

3. Present and Future of the Water Community

Panelists: Bruce Davison, Katherine Finn, Jesse Nielsen
Moderator: Pat Lloyd-Smith

Knowledge mobilization is a key need. Users, scientists, and boundary organizations each have a role to play in the process of translating science and finding the people that need the knowledge. What leads to successful partnerships?

- Focusing more on being human and friendship is the strategy that Anthony, Katherine and Jon have used. Together they've built a network which has led to numerous projects. (Katherine Finn, consultant)
- Two-way, regular and ongoing communication in a project leads to success. In the St. Mary-Milk River watershed, science-partner collaboration and communication is successful because Community Advisory groups make a huge effort to understand what the researchers are doing and the researchers make a huge effort to understand what the communities care about. (Bruce Davison, International Joint Commission)
- People working in a boundary organization who are experienced, locally connected, and willing to do work that no one else is doing are extremely valuable. For example, well de-commissioning was not happening in the Saskatchewan part of the Assiniboine watershed until the local watershed stewardship association stepped in. The association acted as a bridge between private landowners and the provincial government to do paperwork and organize decommissioning projects. (Jesse Neilsen, Assiniboine Water Stewardship Association)

"All the time, when working with communities, I'm bringing something new or a new idea and there's an opposing view. To negotiate, you need to have an empathetic understanding of who you're dealing with and you also have to ensure that you're reaching the most important decision maker." – Katherine Finn

Please note this report is the author's summary of live recordings from the Prairie Water Annual Partners Meeting. Ideas are paraphrased by the author and may not accurately represent the speakers' and panelists' intended ideas.

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GLOBAL WATER FUTURES

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Prairie Water's vision is to gather and create useable knowledge to build resilient communities by ensuring sustainable watershed management and governance on the Canadian Prairies